

Science Advisory Committee Meeting 3-7-02

Review - The Servicewide goals for vital signs monitoring are:

1. Determine status and trends of selected indicators of the condition of park ecosystems to allow managers to make better-informed decisions and to work more effectively with other agencies and individuals for the benefit of park resources.
2. Provide early warning of abnormal conditions of selected resources to help develop effective mitigation measures and reduce costs of management.
3. Provide data to better understand the dynamic nature and condition of park ecosystems and to provide reference points for comparison with other, altered environments.
4. Provide data to meet certain legal and Congressional mandates related to natural resource protection and visitor enjoyment.
5. Provide a means of measuring progress towards performance goals.

Workgroup Tasks (March):

- i. Completed draft of SAC Worksheet - columns: **Resource Components, Stressors, Sources, and Ecological Effects** (see definitions below)
- ii. Report back to group for discussion

Workgroup Tasks (May):

- iii. Complete draft of SAC Worksheet – columns: **Indicators**
- iv. Report back to group for discussion

Worksheet Definitions (also see Worksheet Example for more information):

Important Resources: These include resources that were identified by the Science Advisory Committee (1/10/02) as making significant ecological contributions to the parks in the National Capital Region. The Important Resources include: Air, Geology, Invertebrates, Landscape, RTE (Rare, Threatened and Endangered Species), Vegetation Communities, Water, and Wildlife.

Resource Component: List all components of Important Resources that need to be addressed separately (e.g., components for Wildlife may include grassland birds, amphibians, mammals, fish, etc.).

Stressor: Stressors reduce the viability of Important Resources by impacting their size and/or physical or biological condition.

Sources: Sources of stress are the causes of the degradation of Important Resources. Stresses may have multiple sources (e.g., nutrient loading resulting from residential/commercial/office development, wastewater treatment and agricultural practices), and a source often causes multiple stresses (e.g., park facilities/operations/maintenance/use leading to habitat fragmentation, sedimentation and toxins/contaminants).

Ecological effects: The ecological responses caused by each Stressor and Source combination.

Severity of the Threat: Each combination of Stressor and Source is a Threat. Rank severity of Threat according to its contribution to the degradation of the Resource Component. Use – High, Moderate, Low, or Unknown.

Vital Signs (Ecological Indicator): Vital signs can be any measurable feature of the environment that provides insights into the state of the ecosystem. The term is synonymous with "ecological indicator". Not all indicators are equally informative -- one of the key challenges to a monitoring program is to select for measurement those attributes whose values (or trends) best reflect the status and dynamics of the larger system.

Desirable characteristics of indicators:

- have dynamics that parallel those of the ecosystem or component of interest
- are sensitive enough to provide an early warning of change
- have low natural variability
- provide continuous assessment over a wide range of stress
- have dynamics that are easily attributed to either natural cycles or anthropogenic stressors
- are distributed over a wide geographical area and/or are very numerous
- are harvested, endemic, alien, species of special interest, or have protected status
- can be accurately and precisely estimated
- have costs of measurement that are not prohibitive
- have monitoring results that can be interpreted and explained
- are low impact to measure
- have measurable results that are repeatable with different personnel